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## TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/728,436
Filing Date	December 5, 2003
First Named Inventor	Yung-Tin Chen
Art Unit	1756
Examiner Name	
Attorney Docket Number	MA-111

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached  <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s)  <input type="checkbox"/> Extension of Time Request  <input type="checkbox"/> Express Abandonment Request  <input checked="" type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Document(s)  <input type="checkbox"/> Reply to Missing Parts/ Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers  <input type="checkbox"/> Petition <input type="checkbox"/> Pétition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address  <input type="checkbox"/> Terminal Disclaimer  <input type="checkbox"/> Request for Refund  <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC  <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences  <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)  <input type="checkbox"/> Proprietary Information  <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):  Return receipt postcard 29 references
Remarks		

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Matrix Semiconductor, Inc.		
Signature			
Printed name	Pamela J. Squyres		
Date	5/26/05	Reg. No.	52246

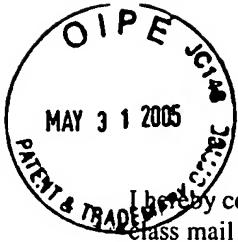
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This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Lorie Arkley

Name (printed)

Lorie Arkley

Signature

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Yung-Tin Chen

Application No.: 10/728,436

Filed: December 5, 2003

Title: Photomask Features with  
Interior Nonprinting Window Using  
Alternating Phase Shifting

Attorney Docket No.: MA-111

Group Art Unit: 1756

Examiner: Unassigned

### INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

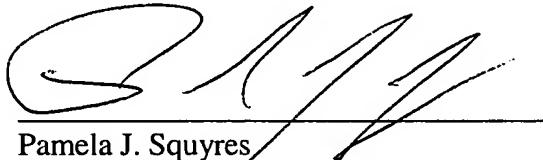
Dear Sir or Madam,

Pursuant to the obligation under 37 CFR § 1.56 and in conformance with 37 CFR §§ 1.97-1.99, Applicant hereby submits documents A1-A35 listed on the attached form PTO-1449 for consideration by the Examiner. Only copies of the reference documents A7-A35 are enclosed herewith. Applicant requests that the Examiner review the entire disclosure of these documents and make them of record.

The filing of this Information Disclosure Statement does not constitute an admission that the information cited herein is, or is considered to be, material to patentability as defined in 37 CFR §1.56(b). Further Applicant reserves the right to contest that any of the information submitted herewith is prior art against the present application.

Dated: May 26, 2005

Respectfully submitted,



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Substitute for form 1449A/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use as many sheets as necessary)		<i>Complete if Known</i>	
		<b>Application Number</b>	10/728,436
		<b>Filing Date</b>	December 5, 2003
		<b>First Named Inventor</b>	Chen, Yung-Tin
		<b>Group Art Unit</b>	1756
		<b>Examiner Name</b>	Unknown
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PATENT & TRADEMARK OFFICE  
MAY 3 1 2005

US PATENT DOCUMENTS

Examiner Initial *	Cite No	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date If Appropriate
A1	6057063	05/02/2000	Liebmann et al.				
A2	6523165	02/18/2003	Liu et al.				
A3	6541165	04/01/2003	Pierrat				
A4	6551750	04/22/2003	Pierrat				
A5	6569583	05/27/2003	Cho et al.				
A6	US20030022074A1	01/30/2003	Nolscher				

## FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T <sup>2</sup>

## OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	A7	BERNARD, DOUGLAS.A. ,et al. , "Clear Field Dual Alternating Phase Shift Mask Lithography", <u>Optical Microlithography XV</u> , SPIE Vol. 4691, (2002),999-1008	
	A8	BURKHARDT, M.,et al. , "Through Pitch Correction of Scattering Effects in 193 nm Alternating Phase Shift Masks", <u>Optical Microlithography XV</u> Vol. 4691, No. I, SPIE, (2002),348-358	
	A9	CHA, HAN-SUN.,et al. , "A Study on Optimization of Alternating Phase Shifting Mask Structure", <u>21st Annual BACUS Symposium on Photomask Technology</u> , SPIE Vol.4562, No. II, (2002),1008-1016	
	A10	FERGUSON, RICHARD.A. , "Pattern-Dependent Correction of Mask Topography Effects for Alternating Phase-Shifting Masks", SPIE Vol. 2440, (2/95),349-360	
	A11	GRIESINGER, UWE.,et al. , "Balancing of Alternating Phase Shifting Masks for Practical Application: Modeling and Experimental Verification", <u>Proc. of SPIE</u> , Vol. 4186, (2001),372-383	
	A12	GRIESINGER, UWE.,et al. , "Transmission & Phase Balancing of alternating Phase Shifting Masks (5X)-Theoretical & Experimental Result", <u>19th Annual Symposium on Photomask Technology</u> Vol. 3873, No. I, SPIE, Published in: Monterey, US,(1999),359-369	
	A13	IRIE, SHIGEO., "Sub-70-nm Pattern Fabrication using an Alternating Phase Shifting Mask in 157-nm Lithography", <u>Optical Microlithography XV</u> , SPIE, Vol. 4691, (2002),1654-1664	
	A14	KANG, MYUNG-AH., "Feasibility evaluations of alternating phase shift mask for imaging sub-80nm feature with KrF", <u>Optical Microlithography XVI</u> , SPIE Vol. 5040, (2003),1115-1124	
	A15	KIM, KEEHO.,et al. , "Optimization of Process Condition to Balance MEF and OPC for Alternating PSM-Control of Forbidden Pitches", <u>Optical Microlithography XV</u> , Vol. 4691, No.I, SPIE, (2002),240-246	

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		<b>Examiner Name</b>	Unknown
Sheet 2 of 3		Attorney Docket No: MA-111	

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	A16	KOO, SANG-SOOL.,et al. , "Study on the Potentialities of sub-100nm Optical Lithography of Alternating and Phase-edge Phase Shift Mask for ArF Lithography", <u>20th Annual BACUS Symposium on Photomask Technology</u> , Vol. 4186, SPIE, (2001),346-358	
	A17	KOSTELAK, R.L. ,et al. , "Exposure Characteristics of Alternate Aperture Phase-Shifting Masks Fabricated using a Subtractive Process", <u>J. Vac. Sci. Tech. B</u> , Vol. 10(6), (Nov/Dec 1992),3055-3061	
	A18	LEVENSEN, M.D. ,et al. , "Phase Phirst! An Improved Strong-PSM Paradigm", <u>Proc. os SPIE</u> , Vol. 4186, (2001),395-404	
	A19	LIN, CHIH-CHENG.,et al. , "Alternating PSM defect printability at 193-nm wavelength", <u>21st Annual BACUS Symposium on Photomask Technology</u> Vol. 4562, No.II, SPIE, (2002),1121-1125	
	A20	MAURER, WILHELM.,et al. , "Proximity Effects of Alternating Phase Shift Masks", <u>19th Annual Symposium on Photomask Technology</u> , Vol. 3873, No. I, SPIE, (9/1999),344-349	
	A21	MISAKA, AKIO.,et al. , "Improved outline phase shifting mask for reduction of the mask error enhancement factor", <u>Optical Microlithography XVI</u> , Proceedings of SPIE, Vol. 5040, (2003),1220-1230	
	A22	MURAI, SHIAKI.,et al. , "Establishment of Production Process and Assurance Method for Alternating Phase Shift Masks", <u>20th Annual BACUS Symposium on Photomask Technology</u> ,SPIE Vol. 4186, (2001),890-901	
	A23	PETERSEN, JOHN.S. ,et al. , "Designing Dual-Trench Alternating Phase-Shift Masks for 140 NM and Smaller Features Using 248 NM KRF and 193 NM ARF Lithography", <u>Proc. of SPIE</u> , Vol. 3412, (1998),503-520	
	A24	PIERRAT, C., "Investigation of Proximity Effects in Alternating Aperture Phase Shifting Masks", <u>20th Annual BACUS Symposium on Photomask Technology</u> , Vol. 4186, SPIE, (2001),325-335	
	A25	PIERRAT, CHRISTOPHE.,et al. , "New alternating phase-shifting mask conversion methodology using phase conflict resolution", <u>Optical Microlithography XV</u> , Vol. 4691, No. I, SPIE, (2002),325-335	
	A26	SAITOU, HIDETAKA.,et al. , "Improvement of Alt-PSM Production Process Using Backside Phase Measurement Method", <u>21st Annual BACUS Symposium on Photomask Technology</u> Vol. 4562, No. II, SPIE, (2002),1087-1095	
	A27	SHIN, IN-GYUN.,et al. , "A Study on the effect of mask reduction ratio in alternating phase shift masks", <u>20th Annual BACUS Symposium on Photomask Technology</u> , Vol.4186, SPIE, (2001),309-315	
	A28	SPENCE, CHRISTOPHER.,et al. , "Integration of Optical Proximity Correction Strategies in Strong Phase Shifters Design for Poly-Gate Layers", <u>19th Annual Symposium on Photomask Technology</u> , Vol. 3873, No.I SPIE, (9/1999),277-287	
	A29	TAN, SIA.K. , "Optimization of Alternating PSM Mask Process for 65 nm Poly Gate Patterning Using 193 nm Lithography", <u>Optical Microlithography XVI</u> , SPIE Vol. 5040,	

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		(2003),1125-1136	
	A30	THIELE, JORG.,et al. , "Introduction of full level alternating phase shift mask technology into IC manufacturing", <u>Optical Microlithography XV</u> , Vol. 4691, No.1, SPIE, (2002),89-97	
	A31	TSAI, W.,et al. , "Technological Challenges in Implementation of Alternating Phase Shift Mask", <u>20th Annual BACUS Symposium on Photomask Technology</u> , Vol. 4186, SPIE, (2001),433-443	
	A32	WESTERMAN, R.,et al. , "Plasma Etching of Quartz for the Fabrication of Alternating Aperture Phase Shift Photomasks: Etch Rate Uniformity Study", <u>20th Annual BACUS Symposium on Photomask Technology</u> , Vol. 4186, SPIE, (2001),316-324	
	A33	WU, CLIVE., "Alternating PSM Design and Its Implications to the Design-to-Manufacturing Flow", <u>Numerical Technologies, Inc.</u> 70 W. Plumeria Dr., San Jose, CA 95134,7 pgs	
	A34	YAMAMOTO, TOMOHIKI.,et al. , "Impact of Alternating Phase Shift Mask Quality on 100 nm Gate Lithography", <u>20th Annual BACUS Symposium on Photomask Technology</u> , Vol. 4186, SPIE, (2001),423-432	
	A35	YOON, SI-YEUL.,et al. , "Evaluation of various alternating phase shifting mask processes for KrF lithography", <u>21st Annual BACUS Symposium on Photomask Technology</u> Vol. 4562, No. II, SPIE, (2002),1017-1025	

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